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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/708,686 | 03/18/2004 | Cecil Rivers JR. | 126819 | 2685 |
| 23413 | 7590 | 09/28/2005 | | |
| CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 | | | EXAMINER WACHSMAN, HAL D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2857 | |

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,686

Applicant(s)

RIVERS ET AL.

Examiner

Hal D. Wachsman

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-13, 16 and 19 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 14, 15, 17, 18 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3-18-04</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2857

1. The drawings are objected to because what is shown in Figures 1 and 2 was known in the prior art (see Background of the Invention (figure 1) and the Brief Description of the Drawings (figure 2)) however these figures have not been labeled as "Prior Art". In addition, the description for Figure 1 in the Brief Description of the Drawings does not indicate that Figure 1 is prior art. Appropriate correction is required.
2. The Abstract is objected to because it is greater than 150 words in length and is not on a single page. Appropriate correction is required.
3. Claims 1, 9, 16 and 19 are objected to under 37 C.F.R. 1.75(i) because each element or step of these claims are not separated by a line indentation. Appropriate correction is required.
4. Claims 1-20 are objected to under 37 C.F.R. 1.75(a) for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The preamble of claim 1 cites "A frequency harmonic identifier system..." however the body of the claim does not clearly show the identification of frequency harmonics. This same type of problem also occurs in claim 9. Claim 2, lines 3-4, cite "...the Fast Fourier Transform input signal.." which it appears should be "...the Fast Fourier Transform of the input signal...". This same type of problem also occurs in claim 13, line 4, claim 16, lines 7-8, claim 19, lines 10-11. Claim 5, lines 1-2, cite "the sets of reference signal bands" however the antecedent basis is "plurality of sets of reference signal bands". Claim 8, line 5, cites "the frequency harmonic identifier" however the antecedent basis is "frequency harmonic identifier system". This same type of problem also occurs in claim 9, lines 13-14, claim 11, lines 1-2. Claim 9, line 2, cites "the

interrupter" however the antecedent basis is "circuit interrupter". This same type of problem also occurs in claim 11, line 3. Claim 14, lines 4-5, cite "the at least one of the plurality sets of reference signal bands" which lacks clear antecedent basis. Claim 16, line 13, cites "...through comparison..." which it appears should be "through the comparison". This same type of problem also occurs in claim 19, line 16. Claim 16, lines 11-13, cite "comparing the tested signal bands to the at least one reference signal band and determining if the input signal is a series arc signal through comparison..." however this does not particularly point out what relationship must exist between the tested signal bands and the at least one reference signal to be able to conclude that the input signal is a series arc signal. This same type of problem also occurs in claim 19, lines 14-18. The preamble of claim 19 cites "...the storage medium including instructions for causing a computer to implement a method.." however as this does not clearly indicate that the instructions are being executed on the computer there is some ambiguity with respect to how the functionality of storage medium is being realized. Claim 20, line 2, cites "a computer" however is this the same computer already referred to in claim 19 ? The examiner asks the applicant to better claim the limitations cited above. While the examiner understands the intentions of the applicant he feels confusion could be drawn from the limitations cited above. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 6, 8, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Russell et al. (5,578,931).

As per claim 1, Russell et al. (Abstract, col. 1 lines 29-47, col. 5 lines 13-19, 37-60, col. 6 lines 15, 16, 25-27) disclose “a frequency analyzer for receiving an input signal and providing an output representing a tested signal”. Russell et al. (Abstract, figure 2, col. 7 lines 64-67, col. 8 lines 1-7) disclose “a storage area containing at least one reference signal band”. Russell et al. (Abstract, col. 4 lines 15-21, col. 5 lines 17-19, col. 7 lines 31-40, col. 8 lines 3-35) disclose “a decision logic, wherein the decision logic compares the tested signal to the at least one reference signal band...determining if the tested signal is a series arc signal or a load”.

As per claim 2, Russell et al. (col. 5 lines 13-19, 37-60) disclose the feature of this claim.

As per claim 3, Russell et al. (see at least abstract) disclose the feature of this claim.

As per claim 4, Russell et al. (Abstract, figure 2, col. 7 lines 64-67, col. 8 lines 1-7) disclose the feature of this claim.

As per claim 6, Russell et al. (Abstract, col. 7 lines 64-67, col. 8 lines 1-7) disclose the feature of this claim.

Art Unit: 2857

As per claim 8, Russell et al. (Abstract, col. 4 lines 15-21, col. 5 lines 17-19, col. 7 lines 31-40, col. 8 lines 3-35) disclose the feature of this claim.

As per claims 16 and 19, Russell et al. (Abstract, col. 1 lines 29-47, col. 5 lines 13-19, 37-60, col. 6 lines 15, 16, 25-27) disclose "sensing current on a power line and providing a sensed current signal as an input signal to a frequency harmonic identifier". Russell et al. (col. 5 lines 13-19, 37-60) disclose "performing a Fast Fourier Transform on the input signal....of the Fast Fourier Transform input signal for providing tested signal bands". Russell et al. (Abstract, figure 2, col. 7 lines 64-67, col. 8 lines 1-7) disclose "accessing a storage area storing at least one reference signal band". Russell et al. (Abstract, col. 4 lines 15-21, col. 5 lines 17-19, col. 7 lines 31-40, col. 8 lines 3-35) disclose "comparing the tested signal bands to the at least one reference signal band...and, if the input signal is a series arc signal, sending a trip signal".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 2857

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell et al. (5,578,931) in view of the Applicant's Admissions of the prior art.

As per claim 9, Russell et al. (Abstract, col. 1 lines 29-47, col. 5 lines 13-19, 37-60, col. 6 lines 15, 16, 25-27) disclose "a frequency harmonic identifier system having; a frequency analyzer for receiving an input signal and providing an output representing a tested signal". Russell et al. (Abstract, figure 2, col. 7 lines 64-67, col. 8 lines 1-7) disclose "a storage area containing at least one reference signal band". Russell et al. (Abstract, col. 4 lines 15-21, col. 5 lines 17-19, col. 7 lines 31-40, col. 8 lines 3-35) disclose "a decision logic, wherein the decision logic compares the tested signal to the at least one reference signal band...determining if the tested signal is a series arc signal or a load; wherein a trip signal is sent from the frequency harmonic identifier...to be a series arc signal". It appears that while Russell et al. as shown above does show the sending of a trip signal which can be used for separating the contacts such as in a circuit breaker for example, Russell et al. does not explicitly disclose the pair of separable contacts for interrupting a circuit. However, the Applicant's Admissions of the prior art (figure 2, specification paragraphs 0013, 0022) teach this excepted feature. It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to apply the Applicant's Admissions of the prior art to the invention of Russell et al. as specified above because as taught by the Applicant's Admissions of the prior art (specification paragraph 0005) arcs may cause damage or start a fire if they occur near combustible material, thus there was a necessity of having a means for interrupting a circuit when arcing occurs.

As per claim 10, Russell et al. (Abstract, col. 3 lines 7-19) disclose the feature of this claim.

As per claim 11, Russell et al. (see at least abstract) disclose the feature of this claim.

As per claim 12, Russell et al. (see at least abstract) disclose the feature of this claim.

As per claim 13, Russell et al. (col. 5 lines 13-19, 37-60) disclose the feature of this claim.

9. Claims 5, 7, 14, 15, 17, 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and subject to the appropriate correction of the 37 C.F.R. 1.75(a) objections noted in paragraph 4 above.

10. The following references are cited as being art of general interest: Kim et al. (6,556,397) which disclose a device for detecting arc fault that distinguishes harmful arc from the signal generated by operation of a dimmer and the start of electronic devices, Neiger et al. (6,128,169) which disclose an arc fault detector with circuit interrupter, Parker et al. (6,772,077) which disclose an electric arc monitoring system,

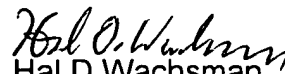
Art Unit: 2857

Macbeth et al. (6,839,208) which disclose that some loads, such as switching power supplies and compact fluorescent lights, produce converter noise which can mimic arc noise and Wong et al. (US 2004/0042137 A1) which disclose *load recognition and series arc detection using bandpass filter signatures*.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D. Wachsman whose telephone number is 571-272-2225. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Hal D Wachsman
Primary Examiner
Art Unit 2857

HW
September 26, 2005